The relationship between nutritional status and reproductive success in animals, including farm animals has been known for a long time. Metabolism and reproductive system functions are hormonally controlled. It can be assumed that in addition to hormones affecting only selected metabolic processes or only reproductive organs, there are also other hormones creating a link controlling both the metabolic status and reproductive system functions. Based on sparse literature data and findings from our preliminary studies, a hypothesis can be put forward that **visfatin** is one such hormone. In the present project it is planned to investigate the expression of visfatin gene as well as the concentration and localization of the hormone protein in the specialized hypothalamic structures (part of the brain secreting GnRH - the hormone controlling the pituitary gland and, indirectly, ovaries), in the pituitary gland, whose hormones directly affect the reproductive system functions, and in the ovaries of gilts during the oestrous cycle and early pregnancy, associated with the implantation of embryos. Another objective of the proposed research is to determine the effect of visfatin on the secretory functions of the pituitary gland and ovaries at different phases of the cycle: to investigate the secretion of FSH and LH by the anterior pituitary cells and the secretion of steroid hormones by luteal cells, granulosa cells and theca interna cells, to determine the mechanism of visfatin action in these cells, and to analyse the effect of visfatin on the transcriptome and proteome of the pituitary and ovarian cells of pigs.